A GUIDE TO MISSOURI'S

TOADS AND FROGS

MISSOURI DEPARTMENT OF CONSERVATION

A Guide to Missouri's Toads and Frogs

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Front Cover: Calling male southern leopard frog. Photo by Jeffrey T. Briggler

Back Cover: Male American toads. Photo by Jeffrey T. Briggler

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GET TO KNOW MISSOURI'S TOADS AND FROGS

Missouri toads and frogs are colorful, harmless, vocal, and valuable. Our forests, prairies, rivers, swamps, and marshes are home to a multitude of toads and frogs, but few people know how many varieties we have, how to tell them apart, or much about their natural history. Studying these animals and sharing their stories with fellow Missourians is one of the most pleasurable and rewarding aspects of our work. Toads and frogs are amphibians — a class of vertebrate animals that also includes salamanders and the tropical caecilians, which are long, slender, wormlike, and legless. Missouri has 25 species and one additional subspecies (or geographic race) of toads and frogs, consisting of five families and eight genera. Toads and frogs differ from salamanders by having relatively short bodies and lacking tails at adulthood. Being an amphibian means that they live two lives: an aquatic larval or tadpole stage and a semiaquatic or terrestrial

Like most amphibians, toads and frogs have an aquatic tadpole stage and a semiaquatic or terrestrial adult stage.

JEFFREY T. BRIGGLER

Calling male American toad.

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A pair of mating gray treefrogs.

adult stage. Of the approximately 7,300 species of amphibians currently recognized in the world, there are more than 6,400 species of toads and frogs. The largest species is the goliath frog, *Conraua goliath*, of the west coast of Africa, which may have a head-body length of nearly 14 inches and may weigh as much as 7 pounds. One of the world's smallest frogs is *Paedophryne amauensis*, which has no common name and lives in the tropical wet-forest leaf litter in Papua New Guinea. It is slightly larger than a quarter inch long as an adult.

Although toads and frogs are more similar than different, there are some basic physical distinctions. Frogs have smooth, wet skin, while toads' skin is dry and warty looking. See the next page for other distinctions. With practice, people can learn to identify a variety of toads and frogs by the sounds they make. A male toad or frog produces his call by a rapid back-and-forth movement of air over his vocal cords. When calling, a toad or frog will close its mouth and nasal openings and force air from its lungs over the vocal cords into the mouth cavity, then back over the vocal cord and into the lungs. Producing a sound in this "closed system" enables some toads and frogs to vocalize underwater. These animals use an enlarged throat or expandable vocal sac to resonate their calls. All Missouri toads and frogs must return to a body of water to reproduce.

All Missouri toads and frogs must return to a body of water to reproduce.

Differences between toads and frogs

Toads

- dry, warty skin
- no teeth
- shorter hind legs than most frogs
- hop or crawl
- lay eggs in long, parallel strings

TOM R. JOHNSON

Freshly laid egg string of the American toad.

Frogs

- smooth, wet skin
- tiny teeth on both upper and lower jaws
- jump or leap
- lay eggs singly, in small clumps, in large masses, or as a film of eggs of the water surface

TOM R. JOHNSON

Freshly laid egg mass of the wood frog.

Most species breed during the late winter, spring, or early summer, but southern leopard frogs, *Lithobates sphenocephalus*, are also known to breed during rainy periods in the autumn. The majority of these amphibians select fishless bodies of water for breeding. Flooded fields, ditches, woodland and prairie ponds, and temporary pools are favorite breeding places. A few adventurous males locate an appropriate

Tiny, newly hatched tadpoles rest for a few days by clinging to aquatic plants.

breeding pond when the temperature and humidity are suitable and begin to call. Each species of toad or frog has a distinct breeding call which entices females to join them and select a mate.

Soon, other males congregate and add their voices to the chorus. Females, heavy with eggs, enter the pond and are grasped by a male in an embrace called "amplexus" and begin the process of egg-laying. During egg-laying, the male's vent opening is positioned just above the female's vent, and as her eggs are released, the male fertilizes them with his milt. He will retain his firm grip on her until all the eggs have been laid. Most eggs hatch within 10 to 14 days of being laid, but they may hatch much sooner if the water temperature is above 70 F. The tiny, newly hatched tadpoles rest for a few days by clinging to aquatic plants, receiving nourishment from the last of the yolk sac stored in their bellies. Most Missouri tadpoles eat aquatic plants — especially algae — as they develop in the wetland. Tadpoles have gills, somewhat like fish, which are covered and protected by a flap of skin. As development progresses, the hind legs form and enlarge. The tail begins to shrink at this stage. As the front legs appear, the tail continues to become smaller. Soon the gills are not used, and the late-stage tadpole begins to breathe air at the surface, using brand-

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Some tadpoles are beautifully colored such as this gray treefrog.

Tadpoles have gills, somewhat like fish, which are covered and protected by a flap of skin.

new lungs. The final stage of development from a tadpole to a young frog, known as a froglet, is the combination of the disappearance of the tail and the change from a life underwater to a life on land or along the edge of a pond or swamp. Soon after transforming from tadpoles to froglets or toadlets, these young amphibians begin eating insects, small spiders, and worms. They grow quickly.

Toads and frogs defend themselves in several ways. Most of their predators are fish, turtles, snakes, birds, and carnivorous mammals — shrews, minks, skunks, and raccoons. Missouri's larger species of frogs also will eat other frogs. Toads cannot jump as fast as frogs. To escape a predator, toads defend themselves by producing toxic or unpleasant-tasting skin secretions that are released when the animal is seized. Due to their toxic skin, toads are not a popular food among most predators. Even their eggs and tadpoles are said to be toxic. Frogs also have skin glands which cause them to taste bad, but the secretions are not generally as strong as those of toads, so frogs are eaten by a much wider variety of predators. People normally are not affected by the skin secretions of toads and frogs, though human eyes are sensitive to these substances. The pain and burning that result when even a slight amount of skin secretion gets in the eyes is unforgettable. Handwashing after

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Pickerel frog tadpole approaching metamorphosis.

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Eastern gartersnake eating a southern leopard frog.

handling a toad or frog is important. The age-old myth that toads can cause warts on people is false.

Missouri's native toads and frogs are a valuable part of our outdoor heritage. Most people probably do not give them much thought, but we need these amphibians to control destructive insects and to add their voices to the sounds of spring and summer nights. Just hearing or seeing them adds to our outdoor enjoyment. Their role in nature can be illustrated by the huge number of insects they eat and by the number of animals that eat toads, frogs, or their tadpoles. Because their bodies readily take in contaminants, they are good indicators of environmental health. Medical researchers also use amphibian skin secretions to control and cure human diseases. Finally, a discussion of the value of frogs should include the fact that thousands of bullfrogs are harvested in our state each year for human consumption — one of Missouri's truly gourmet outdoor foods.

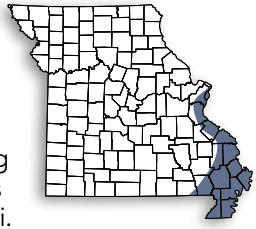
Fish, turtles, snakes, birds, and carnivorous mammals are the most common predators of toads and frogs.

SPECIES ACCOUNTS

For more details, visit mdc.mo.gov/field-guide.

Eastern Spadefoot

***Scaphiopus holbrookii* (Harlan)**



About: This secretive, burrowing species spends most of its life underground and prefers open areas with sandy or loose soil that allows easy digging with its hind feet. It breeds in temporarily flooded fields or ditches during warm, rainy weather in spring or summer. Due to the draining of wetlands and loss of native sand prairies, this species is rare in Missouri. The call is a quick series of raspy ***errrah***, ***errrah***, ***errrah*** sounds.

Description: This is a stout, toadlike amphibian with large, protruding eyes, vertically elliptical pupils, short legs, and large feet. The inner surface of each hind foot has a sickle-shaped spur or spade. Coloration is light brown to yellow-brown. The head, back, and upper part of the legs are mottled with dark brown. There are usually two or three light yellow-brown stripes along the back. The belly is pale gray to white.

Length: Ranges from 1.7 to 2.2 inches (44 to 57 mm) in head-body length.

Diet: Variety of small invertebrates, especially ants, beetles, crickets, flies, termites, and worms.

Missouri Distribution: Eastern counties along the Mississippi River and southeastern section of the state.

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Plains Spadefoot

***Spea bombifrons* (Cope)**

About: The species is at home on the Great Plains, where it inhabits prairies and open-river floodplains. It hides in burrows in sandy soil and becomes active at night, especially after heavy spring and summer rains. Breeding mainly takes place during April and May. Its voice is a long, rasping, nasal ***garvank*** repeated at intervals of one-half to one second.

Description: These small, toadlike amphibians have large, protruding eyes. The pupils of their eyes are vertical and elliptical. The general coloration ranges from gray to brown, and there may be some green on the sides. The small, irregular blotches on the back and legs are dark brown and may encircle the majority of their tiny "warts." The hind legs are short, and the underside of each hind foot has a distinct, wedge-shaped spade, hence its name.

Length: Ranges from 1.5 to 2.0 inches (38 to 51 mm) in head-body length.

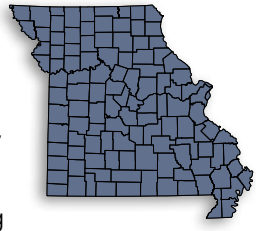
Diet: Variety of insects and earthworms.

Missouri Distribution: Missouri River floodplain from St. Louis to the northwestern corner of the state.

JEFFREY T. BRIGGLER

Eastern American Toad

***Anaxyrus americanus* (Holbrook)**



About: This is Missouri's most common toad and can be found in about any habitat from wooded areas to urban yards. American toads select woodland ponds or temporary bodies of water (e.g., water-filled ditches and road ruts) for breeding in late March to early May. They are easily observed floating and swimming on the water's surface during nighttime breeding activities. The call is a sustained, high-pitched, extended musical trill lasting from 6 to 30 seconds.

Description: The American toad is medium-sized and has a large, kidney-shaped gland called the parotoid gland behind each eye. The pupil of each eye is horizontal. Coloration may be gray, light brown, or reddish-brown. The dark spots on the back usually encircle one or two "warts." The belly is cream colored and mottled with dark gray. Females generally are larger than males.

Length: Ranges from 2.0 to 3.5 inches (51 to 90 mm) in head-body length.

Diet: Earthworms and a wide variety of insects.

Missouri Distribution: Occurs in the northern and western half of the state, while a subspecies, the dwarf American toad, *Anaxyrus americanus charlesmithi* (Bragg), occurs in the southern and southeastern half of the state.

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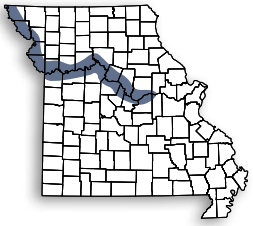
Great Plains Toad

***Anaxyrus cognatus* (Say *in* James)**



About: This secretive, uncommon toad in Missouri is found throughout the Great Plains, hence its name. This species is found along the Missouri River floodplain where it hides in burrows by day. The Great Plains toad lays several thousand eggs in flooded fields, ditches, and temporary pools after heavy spring and summer rains. The call is a loud, chugging sound — ***chee-ga, chee-ga, chee-ga*** — that lasts 20 to 50 seconds.

Description: This medium-sized toad's skin is covered with many small "warts." Large, dark brown or green, paired blotches encircled by white or tan lines are found on the body. The color of the belly is cream. Unlike other toads in Missouri, Great Plains toads have a raised hump, or "boss," between the eyes.

Length: Ranges from 1.9 to 3.5 inches (48 to 90 mm) in head-body length.

Diet: Ants, beetles, termites, and other insects.

Missouri Distribution: Restricted to the floodplain of the Missouri River from central Missouri to the northwestern corner of the state.

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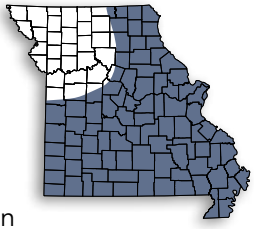
Fowler's Toad

***Anaxyrus fowleri* (Hinckley)**



About: A common toad mainly found along many Ozark streams and lowlands of southern Missouri. This toad is often observed on river sand or gravel bars and in river floodplains where the soil is loose or sandy. As with other toads, this amphibian remains hidden in burrows by day, becoming active at night to hunt for food. Fowler's toads breed later in the season than American toads — from late April to early June. The call is a short, nasal ***w-a-a-a-a-h*** lasting from 1 to 3 seconds.

Description: This species may have a ground color of gray, greenish-gray, tan, or brown. Fowler's toads typically have paired dark markings with three or more "warts." There is often a thin, white stripe down the back. The belly is cream colored, and there may be a dark gray spot on the chest.

Length: Ranges from 2.0 to 3.0 inches (51 to 75 mm) in head-body length.

Diet: Variety of insects and earthworms.

Missouri Distribution: Found over most of the eastern and southern parts of the state.

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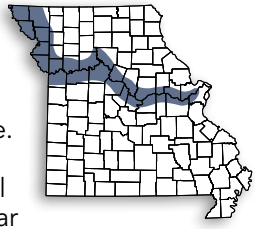
Rocky Mountain Toad

***Anaxyrus woodhousii woodhousii* Girard**



About: This species is mainly found in sandy river bottoms. Like other species of toads, it lays several thousand eggs in flooded fields, ditches, ponds, pools, and streams mainly during late April into June. This species is presumed to hybridize with Fowler's toads in the zone of overlap. The call is a short, nasal ***w-a-a-a-a-h*** lasting from 1 to 2.5 seconds, very similar to the Fowler's toad but with a slightly lower pitch.

Description: This toad is very similar in appearance to the Fowler's toad with color variations from gray, greenish-gray, and tannish-gray to brown. Unlike Fowler's toad, this species typically has irregularly placed dark markings with the number of "warts" varying from one to six. A white stripe is often present down the back, and the belly is white and typically does not have a dark spot on the chest.

Length: Ranges from 2.5 to 3.9 inches (64 to 100 mm) in head-body length.

Diet: Variety of insects and other invertebrates.

Missouri Distribution: Found mainly along the Missouri River floodplain and along streams in the northwestern part of the state.

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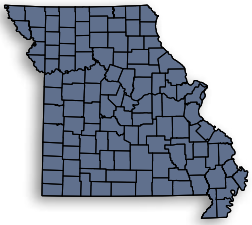
Blanchard's Cricket Frog

***Acris blanchardi* Harper**



About: This small frog is a member of the treefrog family (Hylidae) but is a non-climber and lacks the well-developed adhesive toe pads associated with treefrogs. Cricket frogs are commonly seen along the edges of ponds, rivers, and streams, especially on mud flats and gravel bars. This species avoids predators by a series of quick, erratic hops. Blanchard's cricket frogs breed from late April to early July, at which time their metallic ***gick***, ***gick***, ***gick*** may be heard.

Description: This warty frog exhibits a variety of color from gray, tan, greenish-tan, or brown. The back may have a green, yellow, orange, or brown stripe. There is always a dark triangle between the eyes although it might be faint in some individuals. The belly is white.

Length: Ranges from 0.6 to 1.5 inches (16 to 38 mm) in head-body length.

Diet: Variety of terrestrial insects.

Missouri Distribution: Statewide.

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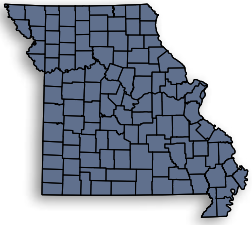
Cope's Gray Treefrog/Gray Treefrog

***Hyla chrysoscelis* Cope *and* *Hyla versicolor* LeConte Complex**



About: Gray treefrogs are Missouri's most common species of treefrog and are frequently observed by Missourians at night around homes. These forest-dwelling species mainly breed in April into June in fishless, woodland ponds. There are two species of gray treefrogs occurring in Missouri: Cope's gray treefrog, *Hyla chrysoscelis*, and the gray treefrog, *Hyla versicolor*. These two species are nearly identical in appearance and are best separated by their calls. The Cope's gray treefrog has a high-pitched buzzing trill, while the eastern gray treefrog has a birdlike, musical trill.

Description: Their color may be gray, greenish-gray, or brown. Bright green specimens are often seen. There is always a large, white marking below each eye. The belly is white to cream, and the inside of each hind leg is washed with yellow or yellow-orange. Large, adhesive toe pads are present on all digits.

Length: Ranges from 1.3 to 2.4 inches (32 to 60 mm) in head-body length.

Diet: Variety of insects, spiders, and other invertebrates.

Missouri Distribution: Both species are found statewide.

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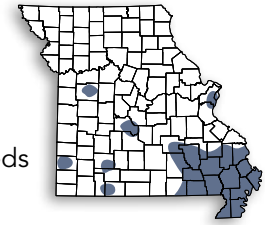
Green Treefrog

***Hyla cinerea* (Schneider)**



About: This attractive frog lives mainly in the last remaining cypress swamps, sloughs, and oxbow lakes of southeastern Missouri. They hide in green leaves during the day and become active at night when they search for insect prey. This treefrog breeds mainly in late spring and into the summer months, and its call is a noticeable part of the nighttime sounds of our cypress swamps. The call is a series of measured, nasal ***quank***, ***quank***, ***quank***, which is normally not heard until after sundown.

Description: This bright green frog's coloration is normally light green, but during cool weather it may be dark green. There is always a white or pale yellow line running from the upper lip down along the sides. Some yellow spots may also be present on the back. The belly is white or yellowish. Distinct round, adhesive pads are found on all digits.

Length: Ranges from 1.3 to 2.2 inches (32 to 57 mm) in head-body length.

Diet: Variety of insects, especially ants, beetles, crickets, grasshoppers, and moths.

Missouri Distribution: Natural range includes southeastern Missouri, along with several isolated, introduced populations.

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Green treefrogs and gray treefrogs can sometimes be difficult to correctly identify, especially since gray treefrogs can be green.

Green Treefrog

JEFFREY T. BRIGGLER

- always green in color
- have a white or pale yellow stripe running from the upper lip and down along the side

Gray Treefrog

JEFFREY T. BRIGGLER

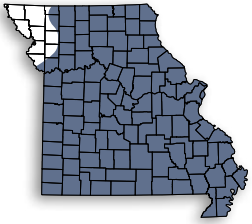
- typically gray in color, (left) but sometimes they are green (below)

JEFFREY T. BRIGGLER

- have a light spot beneath the eye (see arrows) instead of the white or pale stripe as seen in green treefrogs

Spring Peeper

***Pseudacris crucifer* (Wied-Neuwied)**



About: This forest species lives near ponds, streams, and swamps where there is thick undergrowth. They spend most of the time on the forest floor or in low shrubbery. Spring peepers are active from late winter to late fall but breed primarily in late February to mid-May. Their voices are a true announcement of spring. Small, fishless, woodland ponds are required for breeding. Their high-pitched, peeping call can be heard on warm spring nights and also during the day in early summer and fall.

Description: A small, pinkish, gray, or light tan treefrog with a dark X-shaped mark on the back. The X-shaped mark is usually faint in light-colored individuals. This species has reduced adhesive toe pads. There are dark lines running across the top of the head and between the eyes, as well as dark bars on the legs. The belly is a plain cream color.

Length: Ranges from 0.7 to 1.3 inches (19 to 32 mm) in head-body length.

Diet: Variety of small insects and spiders.

Missouri Distribution: Nearly statewide, but not found in northwestern part of state.

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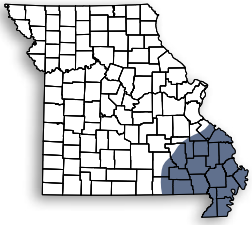
Upland Chorus Frog

***Pseudacris feriarum* (Baird)**



About: This species seeks shelter during the daytime under leaf litter, logs, or bark on the forest floor. At night it forages for prey on the surface. This small frog of southeastern Missouri occurs in small patches of woods, swamps, and river bottomland forest. They breed in late winter and early spring in temporary pools, flooded fields and ditches near forests. This species call is a clicking trill of ***crrreeeeek*** with a rising as it ends, which sounds similar to running a fingernail over the small teeth of a pocket comb. Their call is very similar to that of the Cajun chorus frog and boreal chorus frog.

Description: Upland chorus frogs are gray or tan in color with three narrow or broken series of dashes or spots down the back. There is a dark, irregular stripe that extends from the snout, through the eye, and down each side. The belly is white.

Length: Ranges from 0.7 to 1.4 inches (19 to 35 mm) in head-body length.

Diet: Variety of insects and spiders.

Missouri Distribution: Southeastern part of the state.

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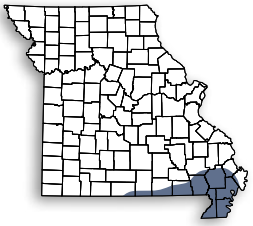
Cajun Chorus Frog

***Pseudacris fouquettei* Lemmon, Lemmon, Colliins, and Cannatella**



About: The Cajun chorus frog lives in a variety of habitats from forested areas to open grasslands and fields. A female may lay up to 1,500 eggs in shallow well-vegetative temporary bodies of water, such as flooded fields, roadside ditches, swamps, and marshes. Although commonly heard calling from breeding wetlands in late winter and into early spring, they are rarely observed outside the breeding season. Their call is clicking trill of ***crrreeeeeek*** that sounds similar to running a finger along the tines of a pocket comb. They have a much slower call rate and slightly longer call than the upland chorus frog and boreal chorus frog.

Description: This small species is tan to brown with three darker stripes or broken series of dashes along the back. There is a dark stripe along the snout, through the eyes, and along each side of the body. The belly is white to cream. The Cajun chorus frog is very similar in appearance to the upland chorus frog and boreal chorus frog.

Length: Ranges from 0.7 to 1.0 inches (19 to 25 mm) in head-body length.

Diet: Variety of invertebrates, especially insects.

Missouri Distribution: A few counties in southeastern part of state.

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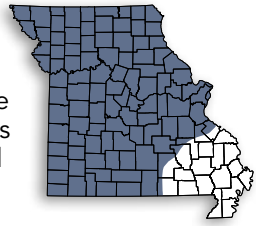
Boreal Chorus Frog

***Pseudacris maculata* (Agassiz)**



About: This small, secretive frog is found on grasslands, meadows, and forest edges. Boreal chorus frogs are seldom seen and spend most of the summer underground in animal burrows or in clumps of grass. This small species breeds in late winter and into spring in temporary pools, fishless ponds, and flooded fields and ditches. Their call is a rasping, vibrating ***crrreeeek***, which sounds similar to running a fingernail over the small teeth of a pocket comb. Their call is slightly raspier or more metallic in sound than the upland chorus frog.

Description: Coloration may be gray or tan with three wide, dark stripes or a series of spots down the back. A wide, dark brown stripe extends from the snout, through the eyes, and along the sides. The belly is white, and the throat may have a few gray spots. The boreal chorus frog is very similar in appearance to the upland chorus frog and Cajun chorus frog.

Length: Ranges from 0.7 to 1.4 inches (19 to 35 mm) in head-body length.

Diet: Variety of invertebrates, especially ants, beetles, crickets, grasshoppers, flies, and spiders.

Missouri Distribution: Nearly statewide; not found in southeastern part of state.

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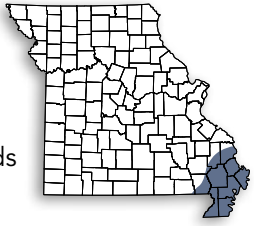
Illinois Chorus Frog

***Pseudacris illinoensis* Smith**



About: This member of the treefrog family acts more like a toad. Most of its life is spent underground in sandy soil. Due to destruction of temporary pools and loss of native sand prairies where it lives, this species is rare in Missouri. It breeds in temporary pools, flooded fields, and roadside ditches during late winter and early spring, at which time its high-pitched, birdlike whistle can be heard.

Description: General color may be tan or gray, with dark brown or gray markings. A V-shaped mark between the eyes and a dark spot below each eye are important characteristics. This small, burrowing chorus frog has large, muscular forelegs that are used for digging. The belly is white.

Length: Ranges from 1.0 to 1.6 inches (25 to 41 mm) in head-body length.

Diet: Variety of invertebrates but prefer moth larvae.

Missouri Distribution: Mississippi lowlands of southeastern part of state.

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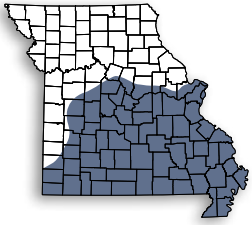
Eastern Narrow-mouthed Toad

***Gastrophryne carolinensis* (Holbrook)**



About: The eastern narrow-mouthed toad is an unusual little amphibian that is seldom seen. It lives under flat rocks or other objects in dry woodlands or near some river floodplains. They are often found under rocks on glades throughout the Ozarks. Breeding mainly takes place in May to early July in temporary pools, fishless flooded ditches, and flooded fields. Its unique call is a bleating, nasal ***baaaaa***, which sounds like a lamb.

Description: This small, plump toad is tan or gray with a dark, wedge-shaped marking on the back and a wide, dark stripe on each side. There is a fold of skin behind its narrow, pointed head. Its belly is heavily mottled.

Length: Ranges from 0.9 to 1.3 inches (22 to 32 mm) in head-body length.

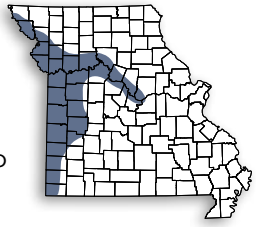
Diet: Primarily specializes on ants, but also eats beetles, spiders, and termites.

Missouri Distribution: Throughout most of the southern half of the state.

JEFFREY T. BRIGGLER

Western Narrow-mouthed Toad

***Gastrophryne olivacea* (Hallowell)**



About: The western narrow-mouthed toad is found throughout the Great Plains. This species is found mainly in grasslands but also along rocky wooded hills, river floodplains, and edges of marshes. During warm, heavy rains in late spring into summer, this species breeds in temporary pools, flooded fields, and flooded ditches. The call is a nasal, buzzy bleat similar to the buzz of a bee.

Description: This small amphibian is typically uniform in color from tan to gray or olive-tan. Like the eastern narrow-mouthed toad, this species has a plump body, pointed head, and a fold of skin behind the eyes. Small black spots may be scattered over the back and hind legs. The belly is white.

Length: Ranges from 0.9 to 1.5 inches (22 to 38 mm) in head-body length.

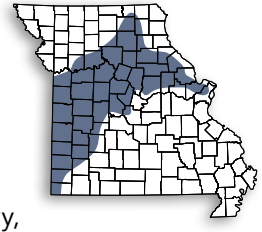
Diet: Primarily ant specialist, but also eats other small invertebrates.

Missouri Distribution: Western Missouri and along the Missouri River floodplain.

TOM R. JOHNSON

Northern Crawfish Frog

***Lithobates areolatus circulosus* (Rice and Davis)**



About: This is Missouri's second largest species of frog. Northern crawfish frogs live in native prairies and grasslands near small creeks or marshes. This species is seldom seen because of its secretive nature. Northern crawfish frogs take shelter in crayfish burrows or other animal burrows. Breeding takes place in late winter and early spring after heavy, warm rains. Fishless ponds and semipermanent pools are selected as breeding sites, and the deep, loud, snoring ***gwwaaa*** can be heard from a considerable distance.

Description: Coloration is tan or light gray, with numerous brown or black spots. There is a faint ridge of raised skin along each side of the back. The belly is white.

Length: Ranges from 2.2 to 4.5 inches (57 to 114 mm) in head-body length.

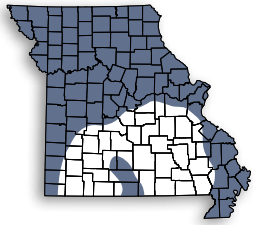
Diet: Variety of insects, spiders, and small crayfish.

Missouri Distribution: Prairie areas in the northern, central, and western sections of the state.

JEFFREY T. BRIGGLER

Plains Leopard Frog

Lithobates blairi **(Mecham, Littlejohn, Oldham, Brown, and Brown)**



About: This medium-sized spotted frog is found in pastures, prairies, and marshes. This species occurs mainly in former prairie regions and along river floodplains. They are often preyed upon by ribbonsnakes and gartersnakes. Plains leopard frogs breed during mid-to-late spring in small ponds, marshes, or flooded fields. The voice is a rapid series of guttural ***chuck-chuck-chuck*** sounds.

Description: The general color is tan, and the round spots on the back and sides may be brown, olive, or dark green. The ridge of skin along each side of the back is broken, and the small posterior section is raised toward the back. A dark spot is often present on the snout, and the belly is white.

Length: Ranges from 2.0 to 3.7 inches (51 to 95 mm) in head-body length.

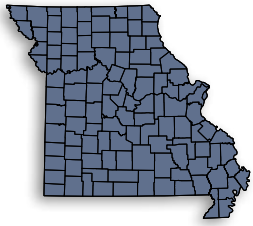
Diet: Variety of invertebrates, such as beetles, crickets, grasshoppers, flies, spiders, and earthworms.

Missouri Distribution: Throughout most of Missouri, but rarely present in the Ozarks.

JEFFREY T. BRIGGLER

American Bullfrog

***Lithobates catesbeianus* (Shaw)**



About: This is Missouri's largest frog and the official state amphibian. This large frog lives in a variety of permanent, aquatic habitats: swamps, marshes, sloughs, lakes, ponds, rivers, and creeks. Breeding mainly occurs from mid-May into July. Male bullfrogs produce their familiar ***jug-o-rum*** calls throughout the summer. This is a game animal in Missouri and is regulated by a season and daily bag limit under the *Wildlife Code of Missouri*.

Description: General coloration ranges from green to olive to brown. The hind legs may be heavily marked with dark brown bars. American bullfrogs lack the two ridges of skin (known as dorsolateral folds) along the sides of the back found on the other *Lithobates* species. The belly is white and usually the throat is mottled in gray.

Length: Ranges from 3.5 to 6.0 inches (90 to 150 mm) in head-body length.

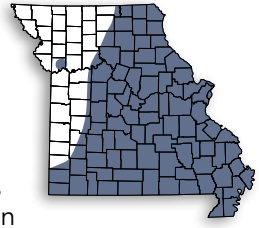
Diet: Eats about anything that can fit in mouth (e.g., insects, crayfish, amphibians, fish, small mammals, and small birds).

Missouri Distribution: Statewide.

JEFFREY T. BRIGGLER

Green Frog

***Lithobates clamitans* (Latreille)**



About: In the Ozarks, green frogs live along rocky creeks and in sloughs and woodland ponds. In northern Missouri, the species occurs mainly in farm ponds and marshes. Breeding typically takes place in late April through June. Their call is an explosive *bong* that sounds like a loose banjo string. This amphibian is considered a game animal and is regulated by a season and daily bag limit under the *Wildlife Code of Missouri*.

Description: This species looks similar to the American bullfrog but is smaller and has a ridge of skin along the sides of the back that is not found on bullfrogs. The ridge extends only to midbody. General coloration may be greenish-brown or brown, and the legs may have distinct dark spots or bars. The upper lip and parts of the head are often bright green. Adult males have a bright yellow throat. The belly is white with some dusky markings.

Length: Ranges from 2.1 to 3.0 inches (54 to 75 mm) in head-body length.

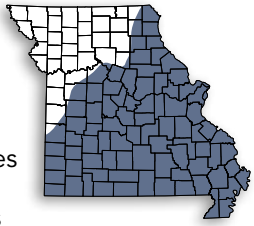
Diet: Variety of invertebrates, such as ants, spiders, beetles, crickets, and earthworms.

Missouri Distribution: Occurs in about three-quarters of the state, southeast of a diagonal line from the southwestern to the northeastern corners of the state.

JEFFREY T. BRIGGLER

Pickerel Frog

***Lithobates palustris* (LeConte)**



About: This frog may be found in wet caves, along well-shaded springs and creeks, and in damp woods. They use wet caves as refuge in the summer to escape hot, dry weather conditions and in winter for protection against cold conditions. Breeding takes place during the spring in fishless, woodland ponds, sloughs, and waterfilled ditches. The breeding call is a descending, low-pitched snore lasting a few seconds and are known to vocalize while underwater.

Description: This medium-sized tan frog has square or rectangular-shaped markings in two parallel rows down the back, and a wash of yellow along the underside of the hind legs. There is a wide ridge of skin along each side of the back. The belly is white.

Length: Ranges from 1.7 to 3.0 inches (44 to 75 mm) in head-body length.

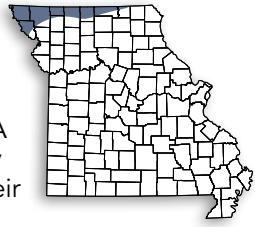
Diet: Variety of invertebrates, such as ants, spiders, beetles, crickets, and earthworms.

Missouri Distribution: Southern half and the eastern part of the state.

JEFFREY T. BRIGGLER

Northern Leopard Frog

***Lithobates pipiens* (Schreber)**



About: This medium-sized frog lives in or near marshes, flooded ditches, and small ponds. Similar to other leopard frogs, this species ventures into grassy areas during the summer to search for prey. A female may lay up to 6,000 eggs in a shallow, grassy area of a marsh during late March through April. Their call is a deep, rattling snore with occasional clucking grunts.

Description: Like other leopard frog species, it is brown or brown-green, has two skin folds running down each side of the back and dark spots on the back. This species, however, has rounded dark spots compared to elongated dark spots found on southern leopard frogs. To distinguish it from the plains leopard frog, look for a continuous, wide skin fold down each side of the back. Northern leopard frogs also have dark spots surrounded by white or pale green rings on their back and a dark spot on their short, blunt nose. The belly is white.

Length: Ranges from 2.0 to 3.5 inches (51 to 90 mm) in head-body length.

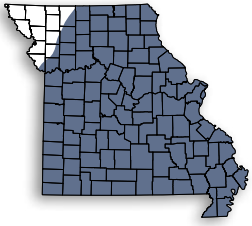
Diet: Variety of insects and spiders.

Missouri Distribution: Only found in extreme northwestern part of state.

TOM R. JOHNSON

Southern Leopard Frog

***Lithobates sphenocephalus* (Cope)**



About: This common frog breeds in late winter or early spring and uses a variety of habitats: waterfilled ditches, ponds, sloughs, lakes, swamps, and marshes. Each female may produce from 3,000 to 5,000 eggs. During summer this species is known to venture far from water. The call of the southern leopard frog is a series of abrupt, chucklelike quacking sounds.

Description: Sometimes called the grass or meadow frog, this species can be distinguished from the plains leopard frog by the presence of some green on the back, the more elongated and fewer dark spots on the back, a more elongated snout, and a continuous ridge of skin down each side of the back. The belly is white.

Length: Ranges from 2.0 to 3.5 inches (51 to 90 mm) in head-body length.

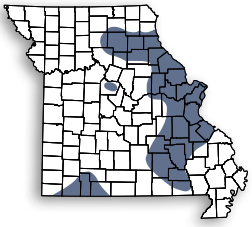
Diet: Variety of insects and other invertebrates.

Missouri Distribution: Nearly statewide except for northwestern part of state.

JEFFREY T. BRIGGLER

Wood Frog

***Lithobates sylvaticus* (LeConte)**



About: In Missouri, this species lives in cool, forested ravines where small, fishless ponds or pools are available for late winter to early spring breeding. They are known to overwinter on land beneath deep layers of leaves or under moist logs. This northern species is called a "glacial relict" because they were pushed to the southern part of their range due to past glaciations. The voice is a quick series of ***waaaduck*** sounds that last about one second each.

Description: This is a tan, pinkish-tan, or brown frog with a dark brown mask through the eye and ear. A thin ridge of skin is present along each side of the back. Belly is white with scattered dark mottling.

Length: Ranges from 1.4 to 2.8 inches (35 to 70 mm) in head-body length.

Diet: Variety of insects (e.g., crickets, leafhoppers, and grasshoppers) and other invertebrates.

Missouri Distribution: Scattered locations in eastern, southeastern, and southwestern sections of the state.

TOM R. JOHNSON

MISSOURI'S TOADS AND FROGS AND THEIR CONSERVATION

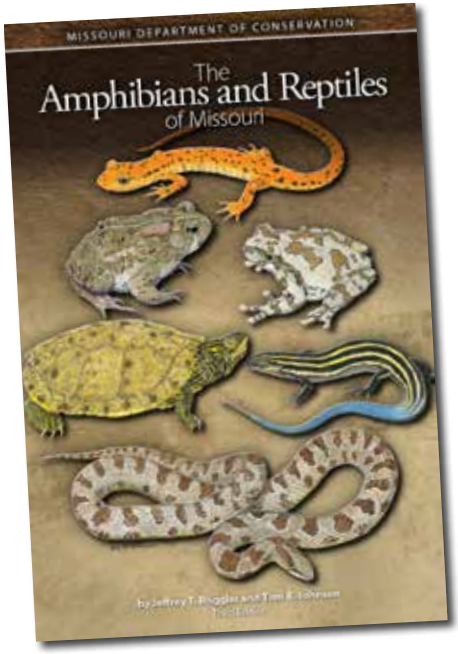
Landowners who wish to encourage a variety and abundance of toads and frogs can do so by following some simple land-management practices. Most of the species native to Missouri breed in fishless ponds or temporary pools. Landowners may not think these small water holes are valuable, but, in fact, a dozen or more species of amphibians may use them as breeding ponds. Small brush piles placed in the water near the pond edge, as well as near the pond, provide good hiding places for young toads and frogs as they leave the pond. Placing dead tree branches in shallow water will provide places for female frogs to attach their egg masses. Fencing the pond from cattle will protect the water quality and allow the growth of a more diverse plant community, which will provide cover and insects. Insecticides and other pesticides should be kept away from any frog ponds because their eggs and tadpoles are highly sensitive to these chemicals. With a little effort, landowners can ensure that these animals remain a part of our outdoor heritage.

Toads and frogs provide food for a wide variety of animals and are also eaten by people — frog legs are a delicacy. Their peeps, trills, whistles, grunts, and snores add aesthetics to a spring or summer evening. The study of these interesting amphibians can be a rewarding summertime hobby. Learning to identify Missouri's species by the sounds they make can be an enjoyable spring and summer pastime and is as challenging as birdwatching. As the famous herpetologist Archie Carr once wrote: "I collect frog songs in my head as some people save stamps in a book." You don't have to be a trained biologist to be able to recognize their various sounds; it just takes practice and lots of patience.

With a little effort, landowners can ensure that these animals remain a part of our outdoor heritage.

JEFFREY T. BRIGGLER

Small, shallow, fishless ponds with a lot of vegetation are important breeding sites for many toads, frogs, and salamanders.



To help you learn more about Missouri's frogs and toads, consider purchasing *The Amphibians and Reptiles of Missouri* (2021) third edition by State Herpetologist Jeffrey T. Briggler and retired State Herpetologist Tom R. Johnson. This updated and expanded 522-page book is a valuable resource for understanding and identifying some of Missouri's most interesting species. To purchase, go online to ***mdcnatureshop.com*** or call 573-522-0108.

JEFFREY T. BRIGGLER

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